

WHAT IS CLAIMED IS:

1. A water-absorbent structure comprising a panel-shaped assembly of thermoplastic synthetic fibers having upper and
5 lower surfaces extending in parallel to each other, cellulose-based fibers and super-absorbent polymer adapted to be swollen after absorption of water both contained in said assembly of said thermoplastic synthetic fibers served as water-absorbing materials wherein at least one of said upper
10 and lower surfaces is wrapped with water-pervious sheet, said water-absorbent structure further comprising:

said assembly being in the form of a honeycomb construction adapted to be elastically compressed in a thickness direction and having a plurality of through-holes
15 extending parallel to one another in a direction parallel to said upper and lower surfaces, each of said through-holes having a cross-sectional dimension larger than any one of interstices of said thermoplastic synthetic fibers in said assembly, wherein said assembly is normally kept in a state compressed
20 in said thickness direction with said through-holes being flattened and adapted to be elastically swollen in said thickness direction so that said flattened through-holes are restored to the initial cross-sectional shape thereof as said

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super-absorbent polymer absorbs water and is swollen.

2. The water-absorbent structure according to Claim 1,
wherein said super-absorbent polymer is provided in particulate
5 or fibrous form.

3. The water-absorbent structure according to Claim 1,
wherein said assembly comprises a plurality of honeycomb thin
leaves placed upon one another in a transverse direction in
10 which said through-holes extend, each of said honeycomb thin
leaves have a width of 3 to 30mm as measured in said transverse
direction.

4. The water-absorbent structure according to Claim 3,
15 wherein said through-holes in each pair of thin leaves adjacent
to each other are at least partially connected.

5. The water-absorbent structure according to Claim 1,
wherein said thermoplastic synthetic fibers are of
20 crimped-type.

6. The water-absorbent structure according to Claim 1,
wherein said assembly, said cellulose-based fibers and said

super-absorbent polymer are mixed at a ratio of 5 - 80wt% : 5
- 60wt% : 10 - 80wt%.

7. The water-absorbent structure according to Claim 1,
5 wherein a cross-sectional shape of said through-hole is a
substantially rectangle and one of diagonals of said rectangle
is substantially in coincidence with said thickness direction.

8. The water-absorbent structure according to Claim 1,
10 wherein said assembly includes at least two said through-holes
aligned in said thickness direction.

9. Process for making a water-absorbent structure
comprising a panel-shaped assembly of thermoplastic synthetic
15 fibers having upper and lower surfaces extending in parallel
to each other, cellulose-based fibers and super-absorbent
polymer adapted to be swollen after absorption of water both
contained in said assembly of said thermoplastic synthetic
fibers served as water-absorbing materials wherein at least one
20 of said upper and lower surfaces is wrapped with water-pervious
sheets, said process being characterized by:

said assembly is in the form of a honeycomb construction
adapted to be elastically compressed in a thickness direction

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and having a plurality of through-holes extending parallel to one another in a direction parallel to said upper and lower surfaces, each of said through-holes has a cross-sectional dimension larger than any one of interstices of said 5 thermoplastic synthetic fibers in said assembly, said process comprises the steps of:

compressing said assembly in said thickness direction while said water absorbing materials are in a wetted condition so that said through-holes are flattened;

10 drying said water absorbing materials so as to maintain said assembly in a compressed state; and

wrapping at least one of said upper and lower surfaces with said water-pervious sheets before or after said step of compressing.

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10. The process according to Claim 9, wherein said super-absorbent polymer is provided in particulate or fibrous form.

20 11. The process according to Claim 9, wherein said process further comprises the steps of feeding a mixture of said thermoplastic synthetic fibers, said cellulose-based fibers and said super-absorbent polymer into a molding die and welding

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said thermoplastic synthetic fibers at crossways thereof within
said molding die under heating to obtain said assembly.

12. The process according to Claim 9, wherein said assembly
5 includes at least two said through-holes aligned in said
thickness direction.